Entergy

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10 CFR 50.73

GNRO-2021/00023

August 19, 2021

U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
Washington, DC 20555-0001

SUBJECT: Grand Gulf Nuclear Station, Unit 1 Revised Licensee Event Report 2020-006-02

Grand Gulf Nuclear Station, Unit 1
Docket No. 50-416
Renewed License No. NPF-29

Attached is revised Licensee Event Report 2020-006-02, Primary Water Tank Low Level Causing Turbine Trip and Subsequent Reactor Scram. This report is being submitted in accordance with 10 CFR 50.73(a)(2)(iv)(A), for any event or condition that resulted in manual or automatic actuation of the Reactor Protection System (RPS).

This letter contains no new Regulatory Commitments. Should you have any questions concerning the content of this letter, please contact Jeff Hardy, Regulatory Assurance Manager at 269-764-2011.

Sincerely,

Jeff A. Hardy
JAH/fas

Attachments: Revised Licensee Event Report 2020-006-02

cc: NRC Senior Resident Inspector
Grand Gulf Nuclear Station
Port Gibson, MS 39150

U.S Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

Attachment
Revised Licensee Event Report 2020-006-02

NRC FORM 366 (08-2020) U.S. NUCLEAR REGULATORY COMMISSION

LICENSEE EVENT REPORT (LER)

(See Page 3 for required number of digits/characters for each block)

(See NUREG-1022, R.3 for instruction and guidance for completing this form http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr1022/r3/)

1. Facility Name	2. Docket Number	3. Page
Grand Gulf Nuclear Station, Unit 1	05000416	1 OF 3

4. Title

Primary Water Tank Low Level Causing Turbine Trip and Subsequent Reactor Scram

5. Event Date			6. LER Number			7. Report Date			8. Other Facilities Involved	
Month	Day	Year	Year	Sequential Number	Rev No.	Month	Day	Year	Facility Name	Docket Number
									N/A	05000 N/A
12	11	2020	2020	- 006 -	02	08	19	2021	Facility Name	Docket Number
									N/A	05000 N/A

9. Operating Mode	10. Power Level
1	100

11. This Report is Submitted Pursuant to the Requirements of 10 CFR §: *(Check all that apply)*

10 CFR Part 20	☐ 20.2203(a)(2)(vi)	☐ 50.36(c)(2)	☒ 50.73(a)(2)(iv)(A)	☐ 50.73(a)(2)(x)
☐ 20.2201(b)	☐ 20.2203(a)(3)(i)	☐ 50.46(a)(3)(ii)	☐ 50.73(a)(2)(v)(A)	**10 CFR Part 73**
☐ 20.2201(d)	☐ 20.2203(a)(3)(ii)	☐ 50.69(g)	☐ 50.73(a)(2)(v)(B)	☐ 73.71(a)(4)
☐ 20.2203(a)(1)	☐ 20.2203(a)(4)	☐ 50.73(a)(2)(i)(A)	☐ 50.73(a)(2)(v)(C)	☐ 73.71(a)(5)
☐ 20.2203(a)(2)(i)	**10 CFR Part 21**	☐ 50.73(a)(2)(i)(B)	☐ 50.73(a)(2)(v)(D)	☐ 73.77(a)(1)(i)
☐ 20.2203(a)(2)(ii)	☐ 21.2(c)	☐ 50.73(a)(2)(i)(C)	☐ 50.73(a)(2)(vii)	☐ 73.77(a)(2)(i)
☐ 20.2203(a)(2)(iii)	**10 CFR Part 50**	☐ 50.73(a)(2)(ii)(A)	☐ 50.73(a)(2)(viii)(A)	☐ 73.77(a)(2)(ii)
☐ 20.2203(a)(2)(iv)	☐ 50.36(c)(1)(i)(A)	☐ 50.73(a)(2)(ii)(B)	☐ 50.73(a)(2)(viii)(B)	
☐ 20.2203(a)(2)(v)	☐ 50.36(c)(1)(ii)(A)	☐ 50.73(a)(2)(iii)	☐ 50.73(a)(2)(ix)(A)	

☐ Other (Specify here, in abstract, or NRC 366A)

12. Licensee Contact for this LER

Licensee Contact	Telephone Number (Include Area Code)
Jeff Hardy, Manager Regulatory Assurance	(269)-764-2011

13. Complete One Line for each Component Failure Described in this Report

Cause	System	Component	Manufacturer	Reportable To IRIS	Cause	System	Component	Manufacturer	Reportable To IRIS
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

14. Supplemental Report Expected	15. Expected Submission Date	Month	Day	Year
☐ Yes (If yes, complete 15. Expected Submission Date) ☒ No		N/A	N/A	N/A

Abstract (Limit to 1560 spaces, i.e., approximately 15 single-spaced typewritten lines)

On December 11, 2020, at 1204 CT, while operating in MODE 1 at 100 percent power, Grand Gulf Nuclear Station experienced an Automatic Reactor Scram after a main turbine and generator trip. All Control Rods fully inserted and there were no complications associated with the Scram. All systems responded as designed and the plant was stabilized in MODE 3.

The direct cause of the generator and turbine trip was while adding makeup water to the primary water system, the Operator misdiagnosed the response of the Leakage Water Return Valve and closed the valve manually. This led to a trip of the main turbine when primary water system tank level lowered to the trip setpoint of 78 percent. Primary water is non-radioactive, ultra-purified water circulated to and from the generator to cool the generator stator, bushings and rotor.

The root causes for this event were: 1) Entergy Engineering Leadership established a design for the Leakage Water Return Valve control logic which was not fully understood and 2) the operating crew lacked adequate knowledge of the Primary Water System to control and stabilize the leakage water standpipe level.

To preclude repetition, continuing training on the Primary Water system will be provided to GGNS License Operator and Non-License Operator. Entergy's procedure EN-HU-104, Technical Task Risk and Rigor, was revised requiring a detailed table listing generation risk parameters being revised for engineering changes with high generation risk. Corrective actions included revising the primary water system operating procedure with specific instructions for local manual standpipe level control.

There were no consequences to the general safety of the public, nuclear safety, industrial safety, or radiological safety. No radiological releases occurred due to this event.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
		YEAR	SEQUENTIAL NUMBER	REV NO.
Grand Gulf Nuclear Station, Unit 1	05000-416	2020	- 006	- 02

NARRATIVE

Plant Conditions:
Grand Gulf Nuclear Station (GGNS) Unit 1 was operating at 100 percent power in MODE 1. There were no Structures, Systems, or Components that were inoperable that contributed to this event.

Event Description:
On December 11, 2020 at 1204 CT, while operating in MODE 1 at 100 percent power, GGNS received a signal for low primary water tank level resulting in an automatic generator and turbine [TA] trip and subsequent automatic reactor Scram.

Primary water is non-radioactive ultra-purified water circulated to and from the generator to cool the generator stator, bushings, and rotor.

All Control Rods fully inserted and there were no complications associated with the Scram. All systems responded as designed and the plant was stabilized in MODE 3. No radiological releases occurred due to this event.

This event was reported under 10 CFR 50.72(b)(2)(iv)(B), as any event or condition that results in actuation of the Reactor Protection System when the reactor is critical. (EN 55030)

This report is made pursuant to 10 CFR 50.73(a)(2)(iv)(A), any event or condition that resulted in manual or automatic actuation of the Reactor Protection System.

Safety Assessment:
The automatic turbine trip and subsequent reactor Scram did not result in actual consequences to safety of the general public, nuclear safety, industrial safety, or radiological safety. The safety significance of this event is determined to be low.

Event Cause(s):
The direct cause of the generator and turbine trip was while adding makeup water to the primary water system, the Turbine Building Operator misdiagnosed the response of the Leakage Water Return Valve and closed the valve manually.

- This prevented transfer of makeup water from the standpipe to the Primary Water tank.
- This action initiated a sequence of events which led to a Main Turbine/Generator trip and Reactor Scram.

The first root cause of the event was that Entergy Engineering Leadership (Corporate Projects and Site Engineering) established a design for the Leakage Water Return Valve control logic which was not fully understood and had impacts that changed the operation which were not desired in Engineering Change, EC 72780, Turbine Control Protection System - Non-Safety, resulting in an automatic plant trip. This ultimately reduced the operational margin causing a plant trip.

The second root cause of the event was that the operating crew lacked adequate knowledge of the Primary Water System to control and stabilize the leakage water standpipe level.

1. FACILITY NAME	2. DOCKET NUMBER	3. LER NUMBER		
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Corrective Actions:
Following the turbine trip, GGNS remained in hot shutdown from December 11, 2020 until December 13, 2020. Corrective actions were made to issue a Standing Order detailing oversight for plant manipulations and issue a revision to the Primary Water system operating instruction with specific instructions for local manual standpipe level control. This action is complete.

To preclude repetition, Entergy's procedure EN-HU-104, Technical Task Risk and Rigor, was revised to require creation of a detailed table listing generation risk parameters (setpoints, settings, dimensions) being revised for engineering changes with high generation risk. This table is to list the old parameter, new, and basis for acceptability. This table would then be presented for challenge such as Independent Third-Party Review, and challenge board. This action has been completed.

To preclude repetition, the long-range training plans for the Primary Water System will be updated and will be included in continuing training plans for GGNS License Operator and Non-License Operator. This action has been completed.

Previous Similar Events:
None.